**DAILY ASSESSMENT FORMAT**

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| **Date:** | 16 July 2020 | **Name:** | Anupama J S |
| **Course:** | Coursera | **USN:** | 4AL16EC005 |
| **Topic:** | Mathematics of machine learning-Linear algebra | **Semester & Section:** | 8th sem “A”section |
| **Github Repository:** | AnupamaJS |  |  |

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| **FORENOON SESSION DETAILS** |
| C:\Users\User\Pictures\Screenshots\Screenshot (302).png  C:\Users\User\Pictures\Screenshots\Screenshot (303).png  In [mathematics](https://en.wikipedia.org/wiki/Mathematics), especially in applications of [linear algebra](https://en.wikipedia.org/wiki/Linear_algebra) to [physics](https://en.wikipedia.org/wiki/Physics), the Einstein notation or Einstein summation convention is a notational convention that implies summation over a set of indexed terms in a formula, thus achieving notational brevity. As part of mathematics it is a notational subset of [Ricci calculus](https://en.wikipedia.org/wiki/Ricci_calculus); however, it is often used in applications in physics that do not distinguish between [tangent](https://en.wikipedia.org/wiki/Tangent_space) and [cotangent](https://en.wikipedia.org/wiki/Cotangent_space) spaces. It was introduced to physics by [Albert Einstein](https://en.wikipedia.org/wiki/Albert_Einstein) in 1916. Statement of convention According to this convention, when an index variable appears twice in a single term and is not otherwise defined (see [free and bound variables](https://en.wikipedia.org/wiki/Free_and_bound_variables)), it implies summation of that term over all the values of the index. So where the indices can range over the [set](https://en.wikipedia.org/wiki/Set_(mathematics)) {1, 2, 3},  {\displaystyle y=\sum \_{i=1}^{3}c\_{i}x^{i}=c\_{1}x^{1}+c\_{2}x^{2}+c\_{3}x^{3}}  is simplified by the convention to:  {\displaystyle y=c\_{i}x^{i}.}  The upper indices are not [exponents](https://en.wikipedia.org/wiki/Exponentiation) but are indices of coordinates, [coefficients](https://en.wikipedia.org/wiki/Coefficient) or [basis vectors](https://en.wikipedia.org/wiki/Basis_vector). That is, in this context *x*2 should be understood as the second component of x rather than the square of x (this can occasionally lead to ambiguity). The upper index position in *xi* is because, typically, an index occurs once in an upper (superscript) and once in a lower (subscript) position in a term (see [*§ Application*](https://en.wikipedia.org/wiki/Einstein_notation#Application) below). Typically, (*x*1 *x*2 *x*3) would be equivalent to the traditional (*x* *y* *z*).  In [general relativity](https://en.wikipedia.org/wiki/General_relativity), a common convention is that   * the [Greek alphabet](https://en.wikipedia.org/wiki/Greek_alphabet) is used for space and time components, where indices take on values 0, 1, 2, or 3 (frequently used letters are *μ*, *ν*, ...), * the [Latin alphabet](https://en.wikipedia.org/wiki/Latin_alphabet) is used for spatial components only, where indices take on values 1, 2, or 3 (frequently used letters are *i*, *j*, ...),   In general, indices can range over any [indexing set](https://en.wikipedia.org/wiki/Indexed_family), including an [infinite set](https://en.wikipedia.org/wiki/Infinite_set). This should not be confused with a typographically similar convention used to distinguish between [tensor index notation](https://en.wikipedia.org/wiki/Tensor_index_notation) and the closely related but distinct basis-independent [abstract index notation](https://en.wikipedia.org/wiki/Abstract_index_notation).  An index that is summed over is a *summation index*, in this case "*i*". It is also called a [dummy index](https://en.wikipedia.org/wiki/Bound_variable) since any symbol can replace "*i*" without changing the meaning of the expression provided that it does not collide with index symbols in the same term.  An index that is not summed over is a [*free index*](https://en.wikipedia.org/wiki/Free_variable) and should appear only once per term. If such an index does appear, it usually also appears in terms belonging to the same sum, with the exception of special values such as zero. Matrix Algebra: an Introduction A **matrix** is a rectangular array of numbers arranged into columns and rows (much like a spreadsheet). Matrix algebra is used in statistics to express collections of data. For example, the following is an Excel worksheet with a list of grades for exams:  Conversion to matrix algebra basically just involves taking away the column and row identifiers. A function identifier is added (in this case, “G” for grades):  Numbers that appear in the matrix are called the matrix **elements**. Matrices: Notation **Why the Strange Notation?**  We use the different notation (as opposed to keeping the data in a spreadsheet format) for a simple reason: convention. Keeping to conventions makes it easier to follow the rules of matrix math (like addition and subtraction). For example, in elementary algebra, if you have a list like this: 2 apples, 3 bananas, 5 grapes, then you would change it to 2a+3b+5g to keep to convention.  Some of the most common terms you’ll come across when dealing with matrices are:   * **Dimension**(also called order): how many rows and columns a matrix has. Rows are listed first, followed by columns. For example, a 2 x 3 matrix means 2 rows and 3 columns. * **Elements**: the numbers that appear inside the matrix. * **Identity matrix (I):** A diagonal matrix with zeros as elements except for the diagonal, which has ones. * **A**[**scalar**](https://www.statisticshowto.com/scalar-definition/): any real number.   [Identity matrices. Image: Wikipedia.com.](https://www.statisticshowto.com/wp-content/uploads/2014/12/identity-matrix.jpg)  *Identity matrices. Image: Wikipedia.com.* Matrix Algebra: Addition and Subtraction The size of a matrix (i.e. 2 x 2) is also called the matrix **dimension** or matrix order. If you want to add (or subtract) two matrices, their **dimensions**must be **exactly**the same. In other words, you can add a 2 x 2 matrix to another 2 x 2 matrix but not a 2 x 3 matrix. Adding matrices is very similar just regular addition: you just add the same numbers in the same location (for example, add all numbers in column 1, row 1 and all numbers in column 2, row 2).  [matrix algebra 3](https://www.statisticshowto.com/wp-content/uploads/2014/10/matrix-algebra-3.jpg)  A note on notation: A worksheet (for example, in Excel) uses column letters (ABCD) and row numbers (123) to give a cell location like A1 or D2. It’s typical for matrices to use notation like gij which means the ith row and jth column of matrix G.  Matrix subtraction works exactly the same way. [Back to Top](https://www.statisticshowto.com/matrices-and-matrix-algebra/#top) Matrix Addition: More Examples Matrix addition is just a series of additions. For a 2×2 matrix:   * Add the top left numbers together and write the sum in a new matrix, in the top left position. * Add the top right numbers together and write the sum in the top right. * Add the bottom left numbers together and write the sum in the bottom left. * Add the bottom right numbers together and write the sum in the bottom right:   [matrix addition](https://www.statisticshowto.com/wp-content/uploads/2015/07/matrix-addition.png)  Use exactly the same procedure for a 2×3 matrix:  [matrix addition 2](https://www.statisticshowto.com/wp-content/uploads/2015/07/matrix-addition-2.png)  In fact, you can use this basic technique for any matrix addition as long as your matrices have the same [dimensions](https://chortle.ccsu.edu/VectorLessons/vmch13/vmch13_3.html)(the same number of columns and rows). In other words, **if the matrices are the same size, you can add them. If they aren’t the same size, you can’t add them.**   * A matrix with 4 rows and 2 columns can be added to a matrix with 4 rows and 2 columns. * A matrix with 4 rows and 2 columns cannot be added to a matrix with 5 rows and 2 columns.   The above technique is sometimes called the “entrywise sum” as you’re simply adding entries together and noting the result. |

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| C:\Users\User\Pictures\Screenshots\Screenshot (307).pngC:\Users\User\Pictures\Screenshots\Screenshot (308).pngC:\Users\User\Pictures\Screenshots\Screenshot (309).pngLearning Objectives After completing this unit, you’ll be able to:   * Find Trailblazer Community Groups. * Explain the value of attending Trailblazer Community Group meetings. * Start a Trailblazer Community Group.   Whether you’re new to the Salesforce ecosystem or you’ve been in the mix for years, there’s a community of customers ready to help you succeed. By the end of this module, you will know how to take full advantage of Trailblazer Community Groups, Salesforce Student Groups, and Trailblazer Community Conferences; you'll understand how they will help you create an incredible professional network, learn from peers and mentors, and blaze new trails in your career.  Are you ready to join a Trailblazer Community Group to meet peers who live in your city, work in similar roles and industries, and share your interests? Let’s get started. Community Groups Come in All Shapes and Sizes Trailblazer Community Groups are split into three pillars: Role, Industry, and Ohana.  Whether you’re a Salesforce Developer looking to connect with peers in your city, a Salesforce Admin hoping to expand your skills and network, or a university student aiming to build your tech and business skills with Trailhead, Trailblazer Community Groups have your back. Empower the Next Generation of TrailblazersLearning Objectives After completing this unit, you’ll be able to:   * Explain what a Salesforce Student Group is. * Help Student Groups near you. * Start a Student Group.  Introduction By 2022, Salesforce is expected to create over 3.3 million jobs worldwide.  This is a huge opportunity for the next generation. Now is the time for our Trailblazer Community to truly inspire and empower students. Let’s take a look at our Salesforce Student Groups and show you how students can start skilling up to position themselves for a Salesforce job right out of college. What is a Student Group? Student Groups help future Trailblazers skill up on Salesforce and learn how to build their careers in the Salesforce ecosystem. Student Group meetings, hosted at least once per semester, help group members:   * Learn new technical or business skills to help build their resume. * Support each other while earning badges with Trailhead. * Get career advice and find mentors within Salesforce and the Trailblazer Community. * Ask questions about working in the Salesforce ecosystem. * Build their professional network to help find jobs.  Discover Community ConferencesLearning Objectives After completing this unit you’ll be able to:   * Explain what a Trailblazer Community Conference is. * Find a Trailblazer Community Conference near you.  Community Conferences at a Glance Trailblazer Community Conferences are an opportunity to learn from peers, build your network, and get inspired to be your best at 1-2 day conferences. Community Conferences are solely organized and hosted by customers like you; from the venue to the content to the speakers, every single aspect of these conferences are organized with the local community in mind.  What can you learn at Community Conferences? Content is typically a mix of technical knowledge and soft skills. And while some conferences focus on a specific role, others span admin, developer, business user, and executive learning topics. In some cases, the content is delivered in the region’s native language.  Community Conferences aren’t just for learning; they also include opportunities to have fun or give back. Many of them incorporate networking and exciting fundraising activities, such as surfing, skiing, dinners, and parties.  Every Community Conference has its own flavor! Here are a few examples:  Punta Dreamin’ is the first Community Conference in Latin America and offers speakers and sessions in both Spanish and English. It takes place in scenic Punta Del Este, Uruguay, and encourages attendees to take a deep dive into both the content and the warm waters off the coast. | | | |